Idaho National Laboratory Bus/Fleet/Fuel Transformation

Tad Pearson, Manager
Transportation and Fleet Management Support Services

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Idaho National Laboratory

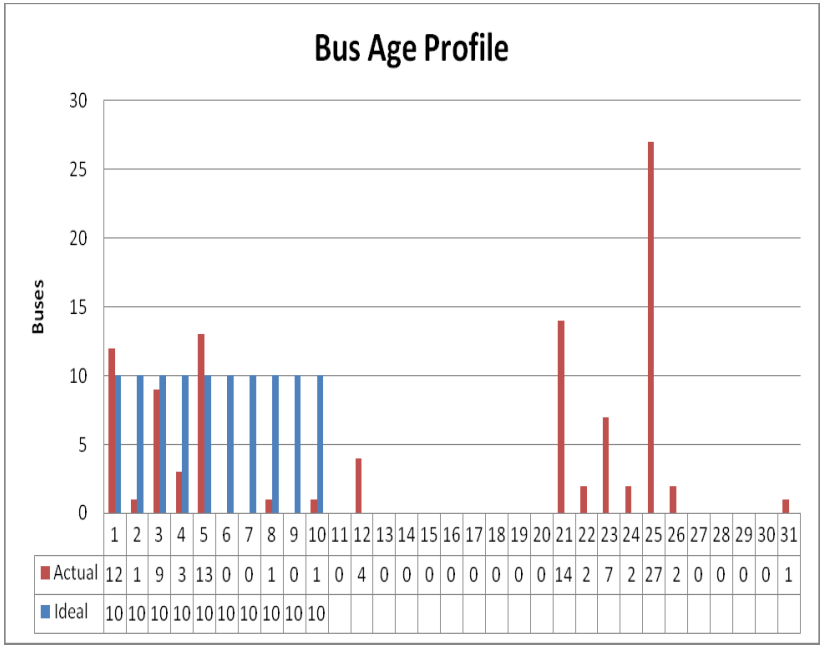
"Provide Mandatory Busing at No Cost to the Employee" *INL Transportation Standard*

To work toward this standard, the INL bus fleet needs to undergo modernization. New buses can be leased from GSA under very favorable terms that will:

- Lower fixed costs below those of comparable private fleets
- Reduce fuel consumption and emissions
- Optimize the replacement cycle
- Reduce maintenance costs
- Increase customer satisfaction
- Decrease downtime

State of the INL bus fleet in 2011

- The INL bus fleet consisted of 103 buses, including 42 commercially leased buses.
- Fleet of 61 owned buses with average age > 20 years.
  - 44 passenger / 4-5 MPG
  - Obsolescence is impacting availability and costs of parts
  - Fleet management is currently cannibalizing buses to keep fleet on the road. Average costs for maintenance is over $22k/yr per INL owned bus.
  - Average book value of owned buses is $5k



Current fleet parts inventory

- Large in house repair part inventory due to commercial obsolescence
- Expensive replacement parts due to age of fleet
- Lengthy wait due to minimum stock in supply house

State of the INL bus fleet in 2012

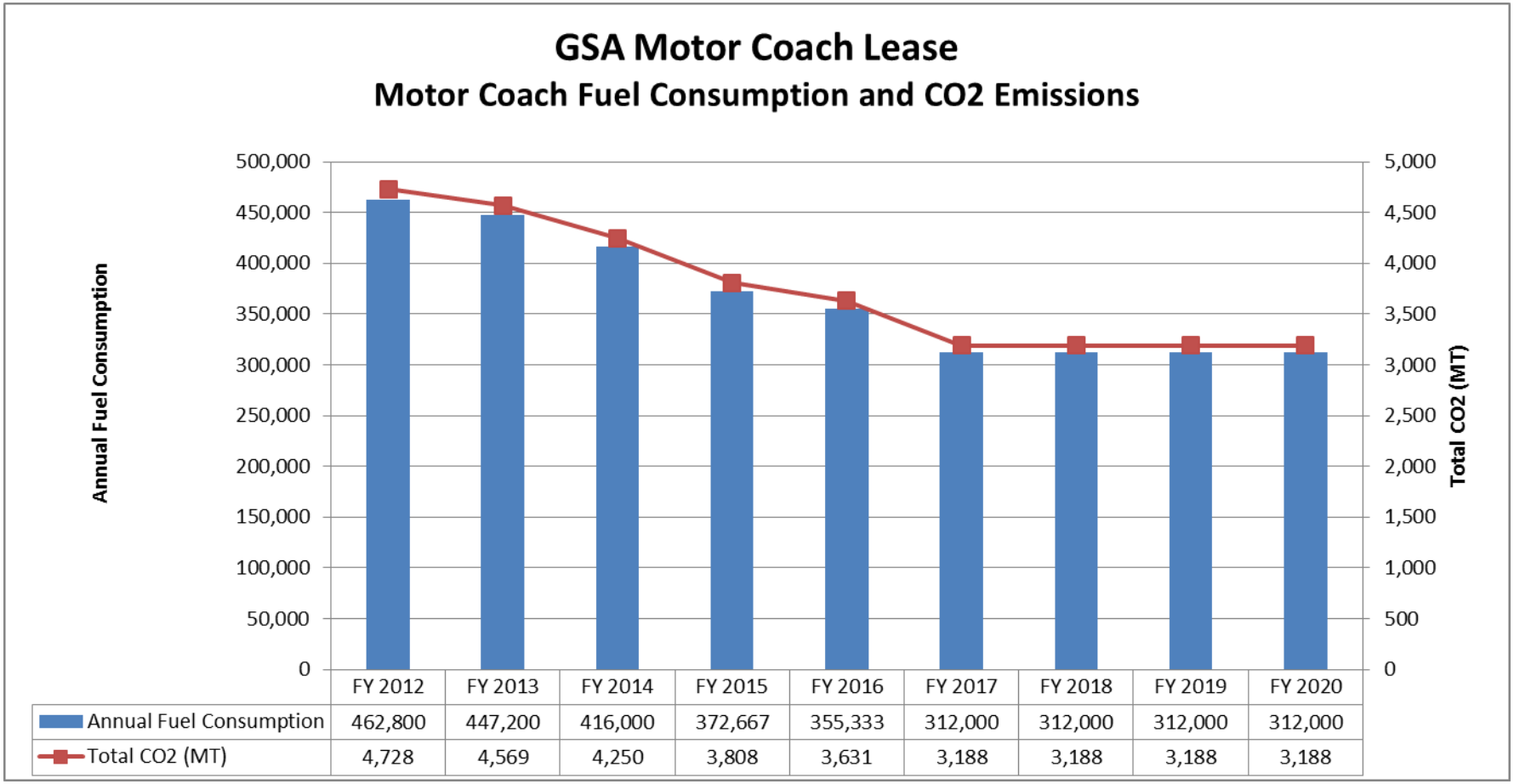
- The INL bus fleet currently consists of 93 buses, including 52 GSA leased buses.
- Fleet of 50 owned buses with average age > 20 years.
  - 44 passenger / 4-5 MPG
  - Obsolescence is impacting availability and costs of parts
  - Fleet management is currently cannibalizing buses to keep fleet on the road. Average costs for maintenance is over $22k/yr per INL owned bus.
  - Average book value of owned buses is $5k

GSA Bus Leasing

- GSA lease cost is $3,500k/month per bus (commercial leases average $5k/month per bus)
- Buses will be identical (decreased costs for parts, maintenance, and operator/mechanic training)
- New model averages > 20% higher fuel economy than INL owned buses
- New model will allow replacement of all 44 passenger buses
- Increased seating capacity of new buses will allow fleet to be reduced from 103 to 93 under current loading (further reduction in petroleum use and GHG emissions)
- Commercially leased buses were replaced in first year to avoid need for increased funding. This allowed INL to obtain over 50 new buses for same cost as the current 37 commercially leased buses.

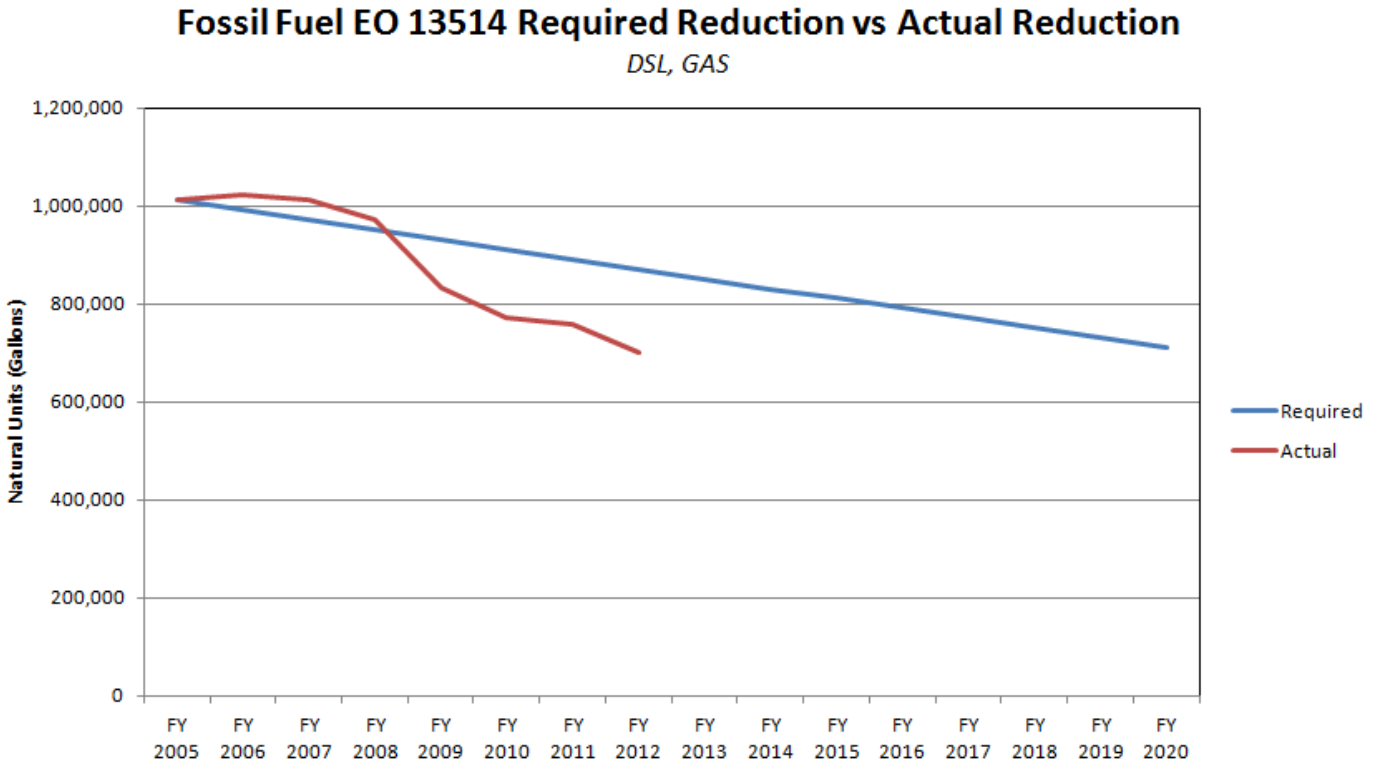
Sustainability – Petroleum Reduction and GHG

- Modernizing bus fleet will continue to reduce INL's petroleum use and Green House Gas emissions.



	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Annual Fuel Consumption	462,800	447,200	416,000	372,667	355,333	312,000	312,000	312,000	312,000
Total CO2 (MT)	4,728	4,569	4,250	3,808	3,631	3,188	3,188	3,188	3,188

State of Fossil Fuel Usage



Fossil Fuel Yearly Reduction - Exective Order 13514 Required vs Actual

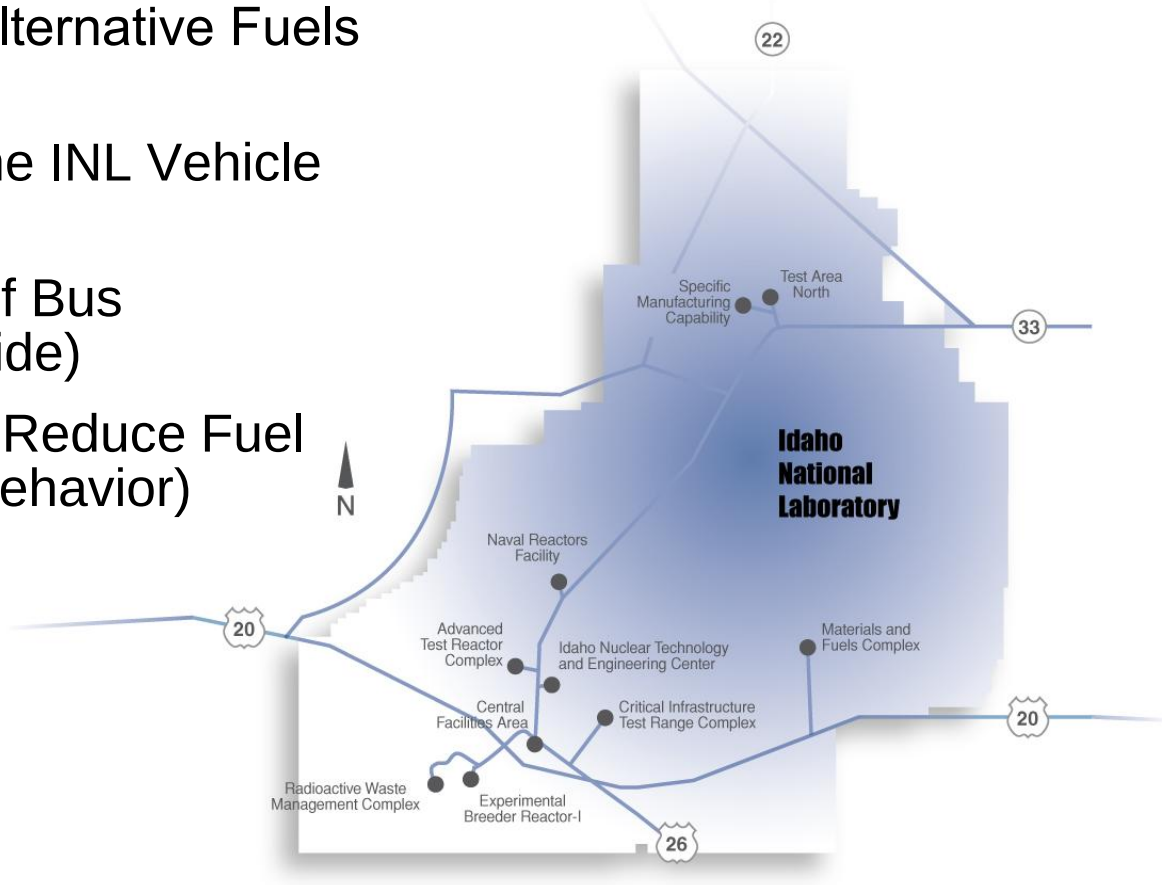
DSL,GAS - All Fueling Sites at INL, GSA reports Carryout, and WEX Transactions - All Equipment

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Required	1,013,951	993,672	973,393	953,114	932,835	912,556	892,277	871,998	851,719	831,440	811,161	790,882
Actual	1,013,951	1,023,245	1,014,304	970,583	831,567	772,086	759,707	702,166				
% Change	0.0%	3.0%	4.2%	1.8%	-10.9%	-15.4%	-14.9%	-19.5%				

*FY2012 Numbers Extrapolated

Our Strategy for Reducing Petroleum Consumption

- Increase Lab's Use of Alternative Fuels (B20 and E85)
- Modify and Right-size the INL Vehicle Fleet (GSA Bus Lease)
- Improve the Efficiency of Bus Operations (Park and Ride)
- Aggressively Track and Reduce Fuel Use (Idling and Driver Behavior)



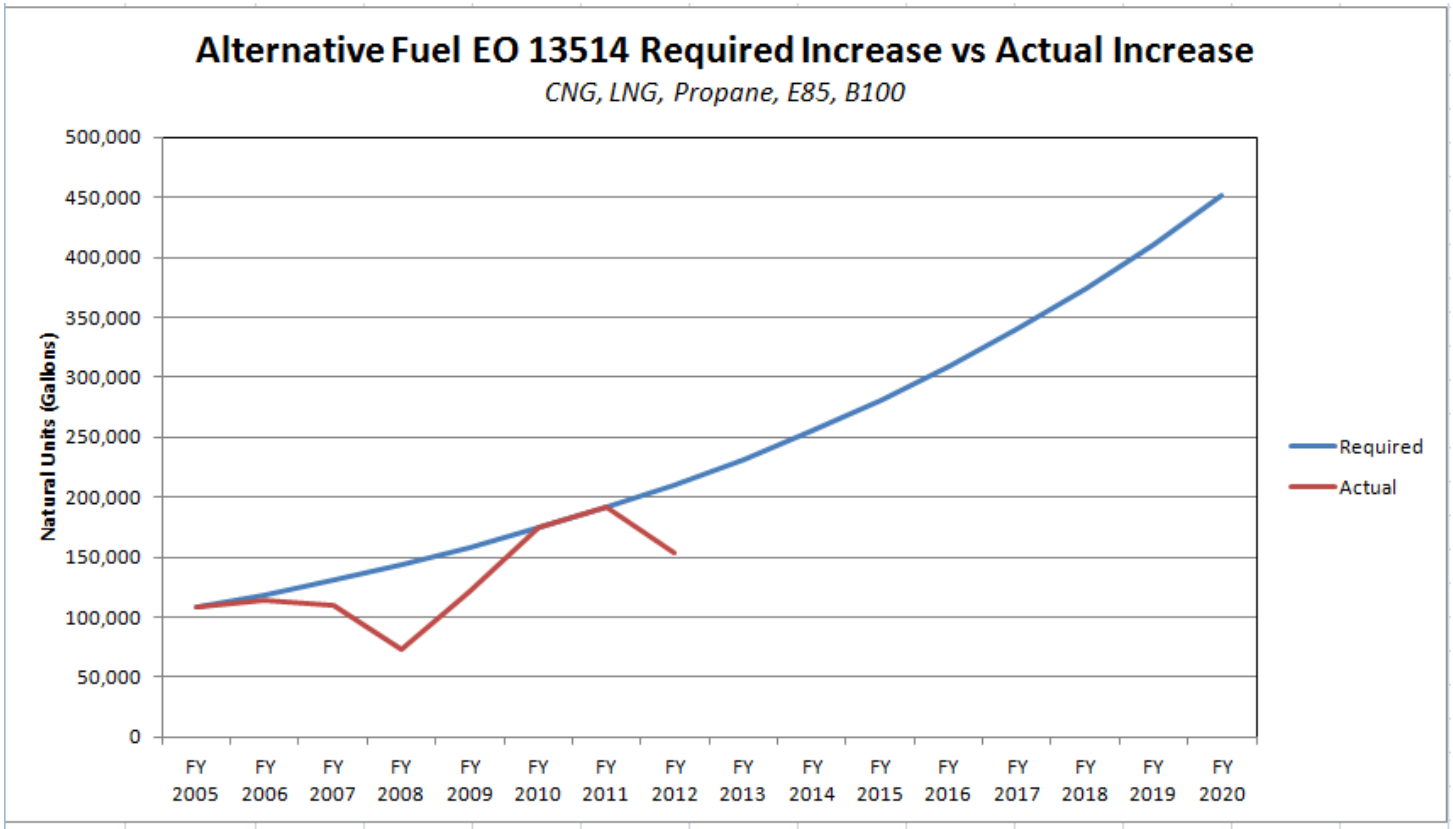
2012 Fossil Fuel Reduction

- Fuel reduction for 2012 has been dramatically lower than target values to meet the Executive Order.
- Cumulative total of reduction for the year has been 110,000 gallons, and is estimated to be approximately 170,000 gallons *compared to targeted reduction* at the end of the fiscal year.
- Utilization has decreased in the bus fleet, and is extrapolated to decrease by 93,000 miles. (This change is mostly due to consolidation of routes, removal of routes, and park and ride).
- In addition, reduction of idling time, driver education and behaviors, and tele-work initiatives (such as online meetings instead of on-site, remote work, etc.) has helped to reduce total fleet utilization.
- Reduced number of buses from 104 in FY2011 to 98 current.

Continuing efforts for fossil fuel reduction

- New, more efficient buses.
  - 2 mpg better per bus.
  - Idle time reduced to 10 minutes via auto-shutoff.
- Bus simulator research with drivers.
- Usage of B20 year round.
- Research into new technologies for mixed fuel (CNG + B20 results in a 30% reduction of fossil fuel usage)
- KeyValet Automated Motor Pool:
  - Better information to help us right-size light fleet while maintaining customer needs.

State of Alternative Fuel Usage



Alternative Fuel Yearly Increase - Exective Order 13423 Required vs Actual

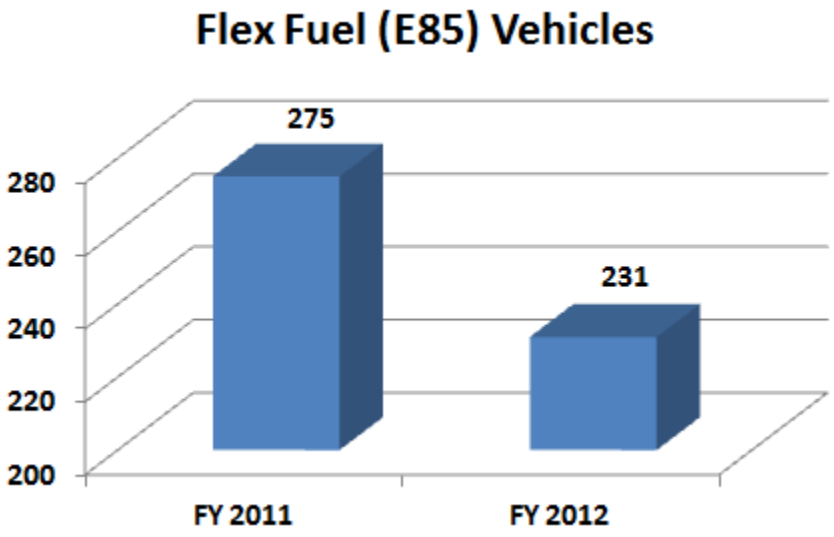
CNG, LNG, Propane, E85, B100 - All Fueling Sites at INL, GSA reports Carryout, and WEX Transactions - All Equipment

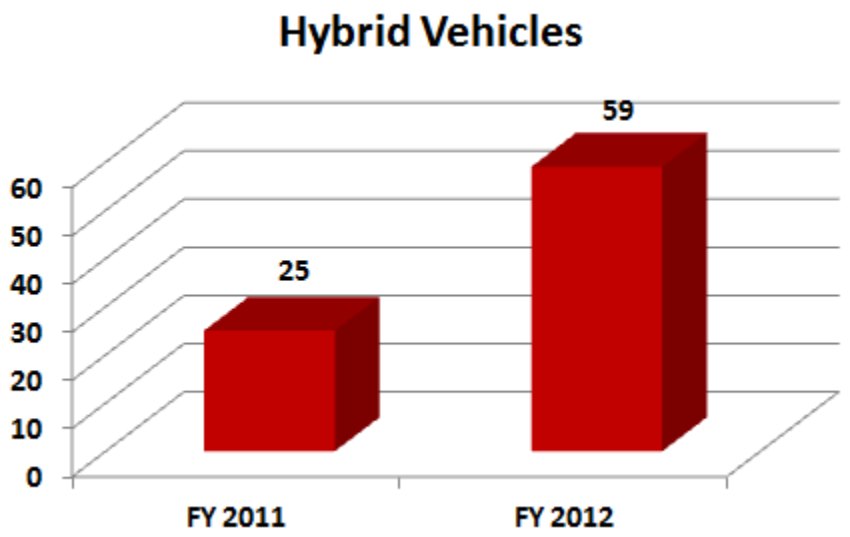
	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Required	108,147	118,962	130,858	143,944	158,339	174,172	191,590	210,749	231,823	255,006	280,506	308,557
Actual	108,147	114,004	109,408	73,781	121,135	175,125	192,020	154,322				
% Change	0.0%	-4.2%	-16.4%	-48.7%	-23.5%	0.5%	0.2%	-26.8%				

*FY2012 Numbers Extrapolated

Reason for decline in Alternative Fuel

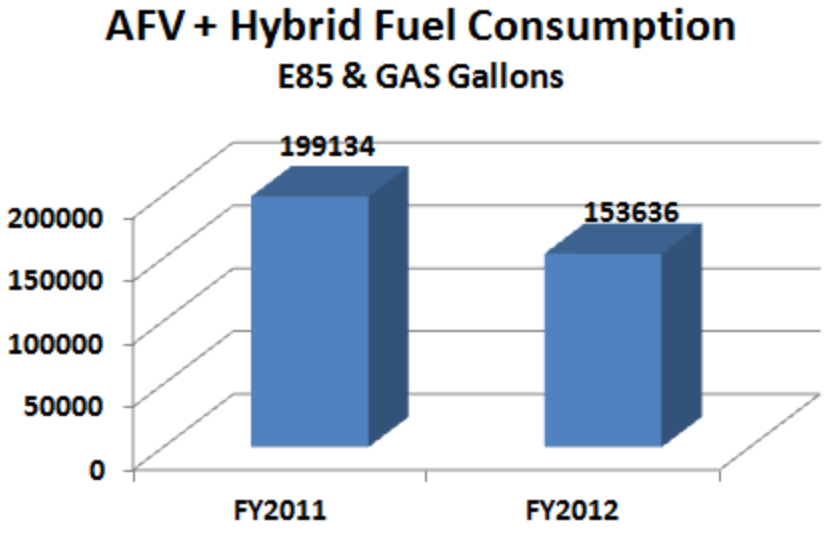
- Dramatic decrease in flex fuel vehicles in 2012.
- Increase in fossil fuel burning hybrids.

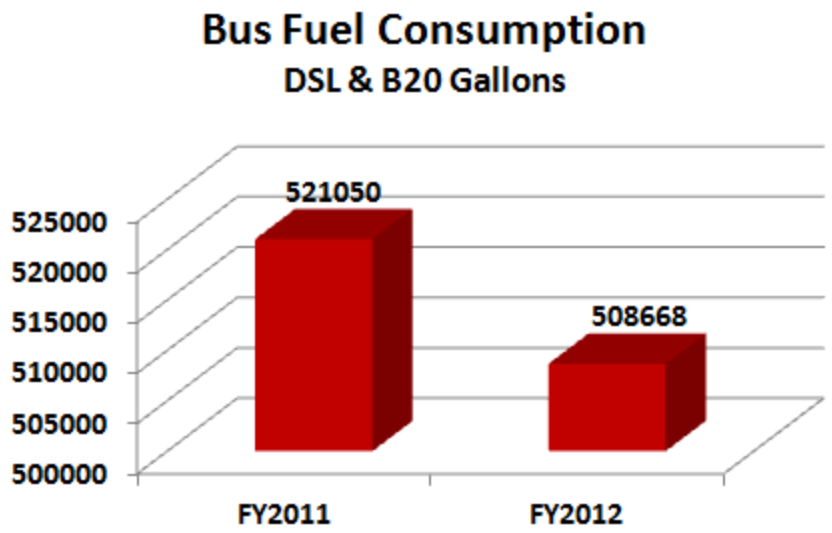




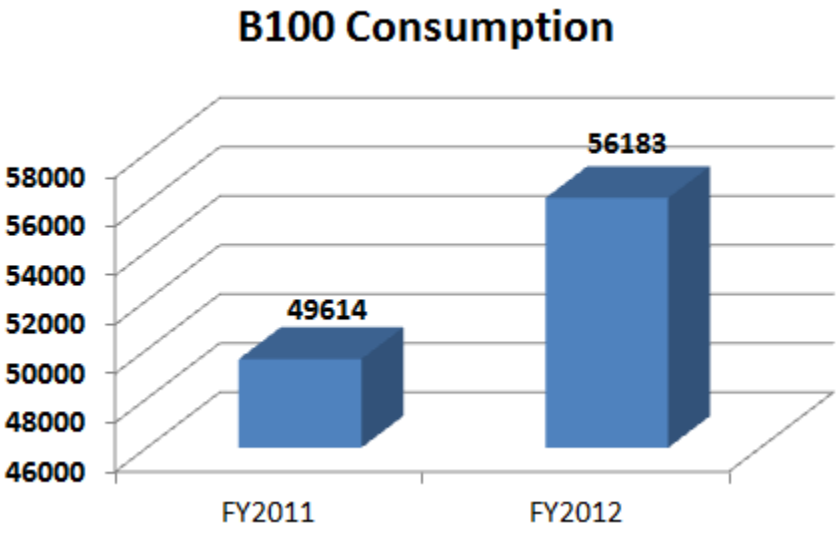
Reasons for decline in Alternative Fuel cont.

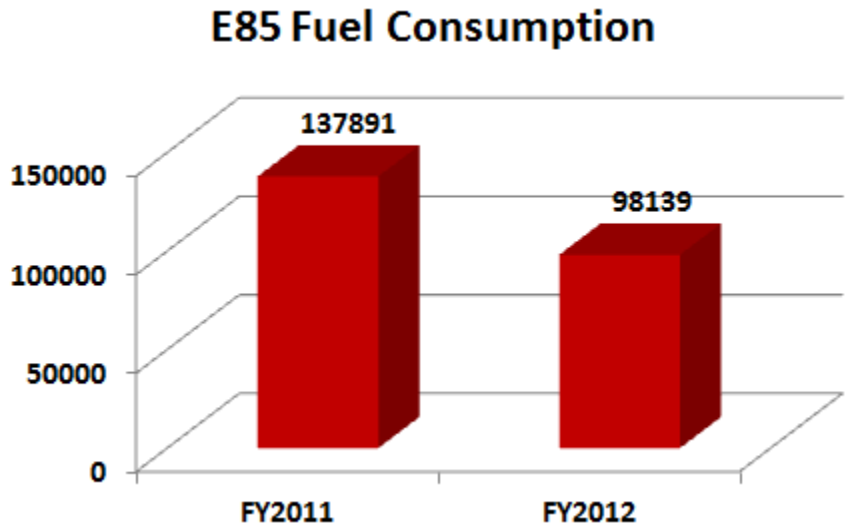
- Decrease in light duty gallons of fuel burned (less vehicles and less utilization).
- Decrease in bus gallons of fuel burned (same as reasons mentioned in fossil fuel reduction).





Total Alternative Fuel Usage Compared to Previous FY





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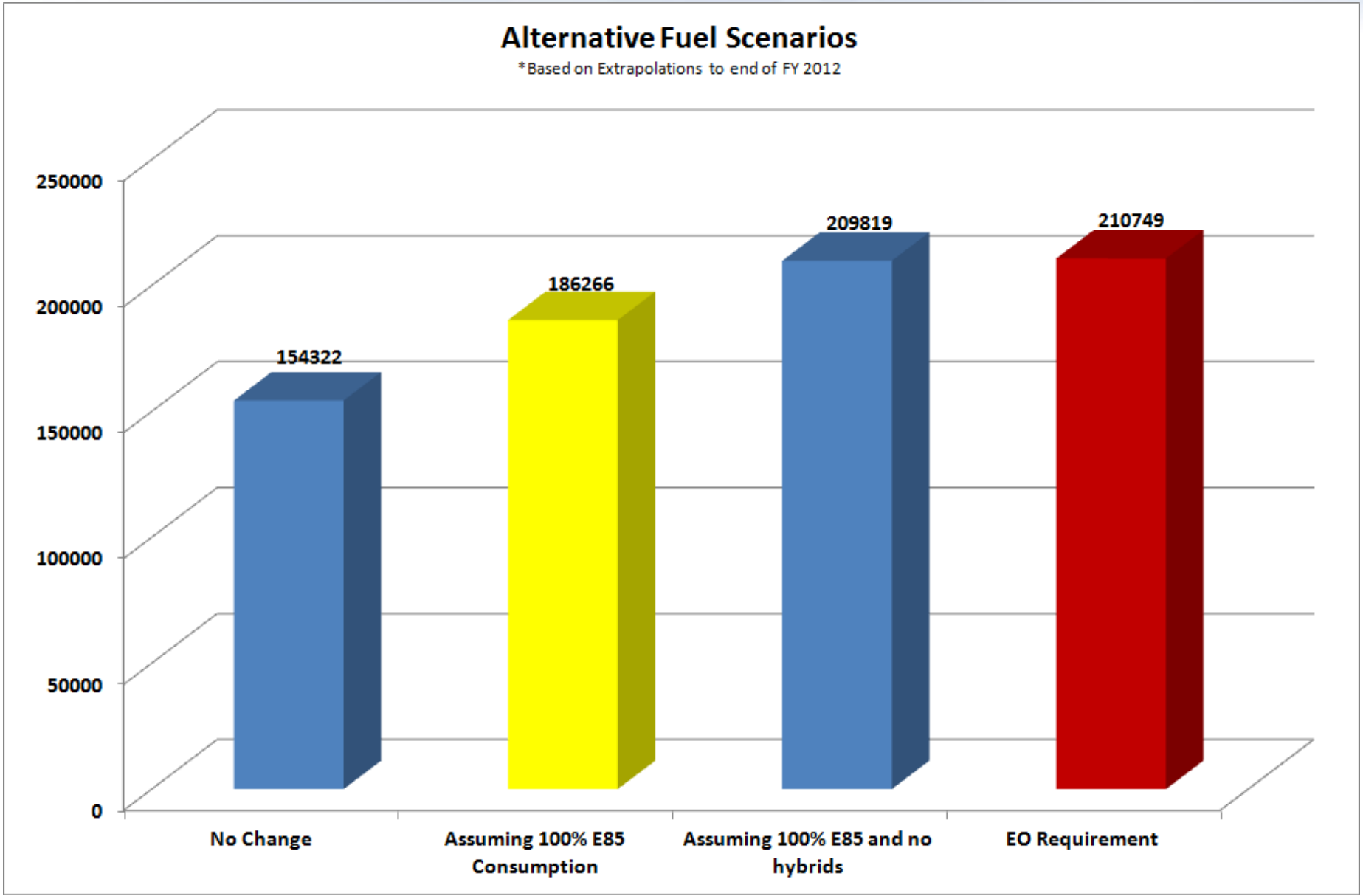
Alternative Fuel Scenarios
*Based on Extrapolations to end of FY 2012
250000
200000
150000
100000
50000
0
154322
186266
209819
210749
No Change
Assuming 100% E85 Consumption
Assuming 100% E85 and no hybrids
EO Requirement

Improvements in Alternative Fuel Usage

- Usage of B20 year round. This has helped increase bus biodiesel usage with respect to total bus fueling. (56183 gallons of B100 in FY2012 compared to 49614 gallons in FY2011)
- Sending opportunity reports to managers to help them communicate importance of E85 usage to staff.
- Turning off unleaded dispensers for Flex Fuel vehicles.
- Acquisition of 8-10 AFV's to replace fossil fuel burning vehicles in June.
- Swapping highly utilized fossil fuel vehicles with Flex fuel vehicles.
- Research into new technologies for mixed fuel (CNG + B20 results in a increase of alternative fuel – and at a higher ratio than Biodiesel alone).

Positive impact to the Department of Energy

- Commitment to Meeting Executive Order 13514
  - Fossil fuel reduction
  - Alternative fuel consumption
  - Green house gas emissions reduction
- Commitment to Sustainability
  - Greening the Idaho National Lab
  - Preserving energy resources for future generations
- Commitment to be good stewards of tax payer dollars